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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,378	11/05/2003	Darren C. Downs	FMO P-3745-2	8342

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EXAMINER

QUARTERMAN, KEVIN J

ART UNIT PAPER NUMBER

2879

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/702,378

Applicant(s)

DOWNS ET AL.

Examiner

Kevin Quarterman

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33, 35 and 36 is/are pending in the application.  
 4a) Of the above claim(s) 1-18, 32, 33, 35 and 36 is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 19-31 is/are rejected.  
 7) ☒ Claim(s) 31 is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 0804; 0205.  
 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) ☐ Notice of Informal Patent Application (PTO-152)  
 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-18 and 32-36, drawn to a spark plug, classified in class 313, subclass 141.
  - II. Claims 19-31, drawn to a method for making a spark plug, classified in class 445, subclass 7.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the spark plug can be made by providing a firing tip having a longitudinal axis; providing a segment of metal wire; forming a through hole in the wire by an etching method; inserting the firing tip within the through hole; and compressing the firing tip in the direction of its longitudinal axis such that a first end of the firing tip flares outwardly from the longitudinal axis.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Jon Shackelford on 10 May 2005 a provisional election was made with traverse to prosecute the invention of Group II, claims 19-31. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-18 and 32-36 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

8. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Reference sign "44" mentioned in paragraph [0013] on page 4 of the description is not shown in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

9. Claim 31 is objected to because of the following informalities: It appears that the term *prior* should be inserted between the terms "out" and "to" in the claim, since the original claim included the term prior to applicant's submission of the preliminary amendment received on 12 May 2005. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 21 recites the limitation "the material" in the last line of the claim. There is insufficient antecedent basis for this limitation in the claim. It is unclear what material

applicant refers to. Due to their dependency upon claim 21, claims 22 and 23 are also deemed indefinite.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 19-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Mohle (US 4,771,210).

15. Regarding independent claim 19, Figure 1 of Mohle shows a method of constructing a ground electrode for a spark plug comprising the steps of providing a segment of metal wire (6); forming a through hole (4) in the wire; providing a firing tip (5) having a longitudinal axis; inserting the firing tip within the through hole; and compressing the firing tip in the direction of its longitudinal axis such that a first end of the firing tip flares outwardly from the longitudinal axis (Figs. 5 & 6).

16. Regarding claim 20, Figure 4 of Mohle shows a step of forming an enlarged head (8) on a second end of the firing tip wherein the enlarged head abuts an outer surface of the wire upon inserting the firing tip within the through hole.

17. Regarding claim 21, Mohle discloses a weld joint being formed between the firing tip and the material (col. 2, ln. 3-5).

18. Regarding claim 22, Mohle discloses resistance welding being performed to construct the weld joint (col. 2, ln. 25-30).

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19. Regarding claim 23, Mohle discloses laser welding being performed to construct the weld joint (col. 2, ln. 25-30).

20. Regarding claim 24, Figures 5 and 6 of Mohle show a step of forming a counterbore extending from at least one of the surfaces into the metal wire and wherein the compressing step further comprises compressing the firing tip to cause the first end to flare outwardly into the counterbore.

21. Regarding independent claim 25, Figure 1 of Mohle shows a method of making a spark comprising the steps of installing a center electrode assembly (1) within an insulator (not labeled); providing a metal shell (not labeled) having a central bore sized to receive the insulator; forming a ground electrode (6) having a through hole (4) adjacent one end thereof; inserting a firing tip (5) having a longitudinal axis into the through hole; compressing the firing tip in the direction of the longitudinal axis until the firing tip undergoes deformation (col. 2, ln. 34-40); attaching the ground electrode the metal shell; and securing the insulator and center electrode assembly within the central bore of the metal shell.

22. Regarding claim 26, Figures 5 and 6 of Mohle show a step of forming the ground electrode such that the through hole has a counterbore at a surface of the ground electrode.

23. Regarding claim 27, Figures 5 and 6 of Mohle show the compressing step further comprising compressing the firing tip such that it flares out into the counterbore.

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24. Regarding claim 28, Figures 5 and 6 of Mohle show the inserting step further comprising inserting a firing tip having an enlarged head (8) until the head engages an outer surface of the ground electrode opposite the counterbore.

25. Regarding claim 29, Figures 5 and 6 of Mohle show the compressing step further comprising compressing the firing tip such that it bulges outwardly within the through hole and deforms a center portion of the through hole outwardly, whereby the firing tip is mechanically interlocked to the ground electrode.

26. Regarding claim 30, Mohle discloses a step of welding the firing tip to the ground electrode (col. 2, ln. 3-5).

27. Regarding claim 31, Figure 1 of Mohle shows the providing step being carried out prior to the installing step.

### ***Conclusion***

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Loffler (US 5,510,667) discloses a spark plug with electrode having a platinum-nickel fiber composite material. Schwab (US 5,998,912) discloses a spark plug with ground electrode having arcuate arm portion. Beohler (US 6,533,629) discloses a spark plug with wear-resistant electrode tip. Nishio (US 4,414,483) discloses a spark plug with rivet-like tip center electrode. Lara (US 4,023,058) discloses a spark plug with a port in a second electrode.



**Contact Information**

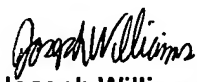
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Quarterman  
Examiner  
Art Unit 2879

kq   
18 July 2005

  
Joseph Williams  
Primary Examiner  
Art Unit 2879